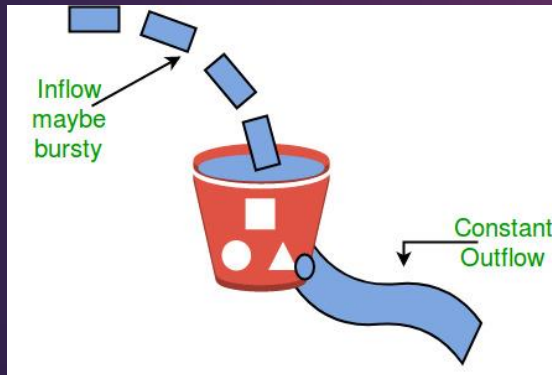


CUBIC-FIT: A High Performance Congestion Control Algorithm

CSE 322: Computer Network Sessional (NS2)

PRESENTED BY,
AYESHA BINTE MOSTOFA
STUDENT ID: 1805062



Reference

Paper Link :

https://www.researchgate.net/publication/260533734_CUBICFIT_A_high_performance_and_tcp_CUBIC_friendly_congestion_control_algorithm

Author:

Jingyuan Wang, Jiangtao Wen, Yuxing Han, Jun Zhang, Chao Li and Zhang Xiong

► Published In: [IEEE Communications Letters](#) (Volume: 17, Issue: 8, August 2013)

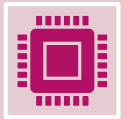
Motivation



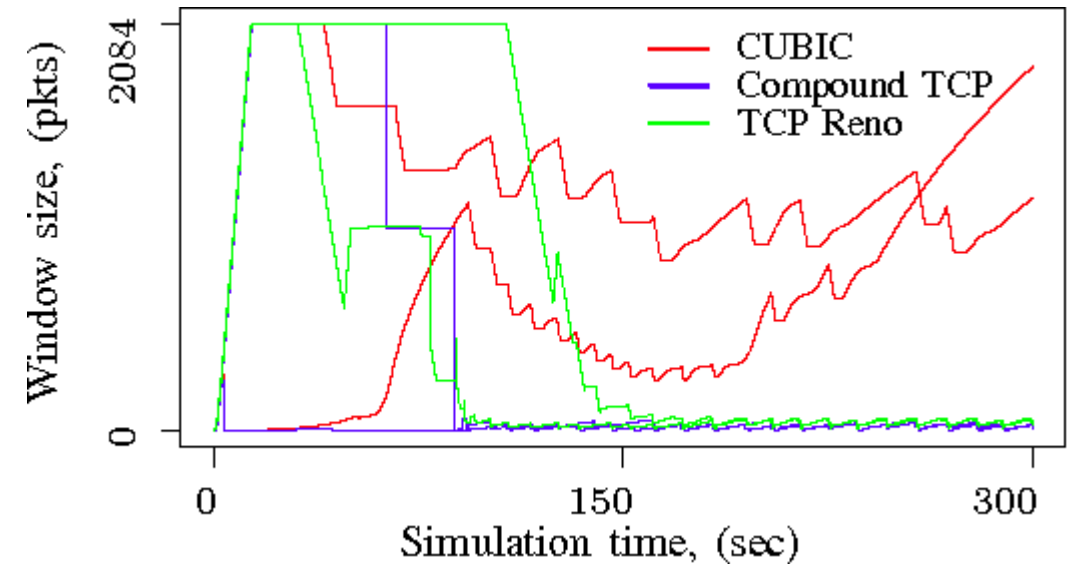
Increase of Linux based networks



Linux Kernel uses TCP Cubic



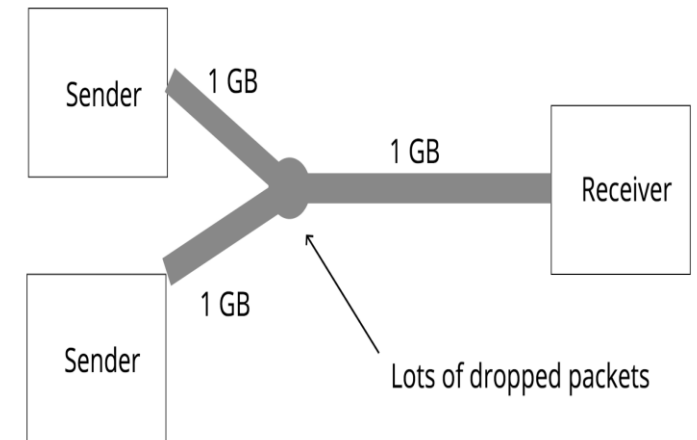
Cubic friendly Algorithm is required like existing TCP Reno friendly Algorithms.



Existing Algorithm : CUBIC

2 challenges for the CUBIC algorithm and CUBIC-dominated networks.

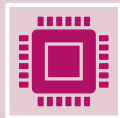
- I. **Performance over wireless links.** CUBIC is designed for large BDP networks but **not wireless networks**. CUBIC uses packet losses as network congestion symptoms, so random physical and MAC layer artifacts introduced packet losses can cause performance degradation of TCP CUBIC.
- II. **CUBIC friendliness.** TCP flows in CUBIC-dominated networks should stay friendly with other CUBIC flows. However, most existing algorithms are designed to Reno-dominated networks and maintain friendliness with Reno but not CUBIC, which introduces serious **fairness problem**.



Improved Algorithm: CUBIC-FIT



Delay-based TCP to extend the CUBIC algorithm framework



Simulation of the behavior of multiple CUBIC flows **in a single TCP connection** to fully utilize network capacity.



End-to-end queuing delay to adjust the simulated CUBIC flow number.

Improvement



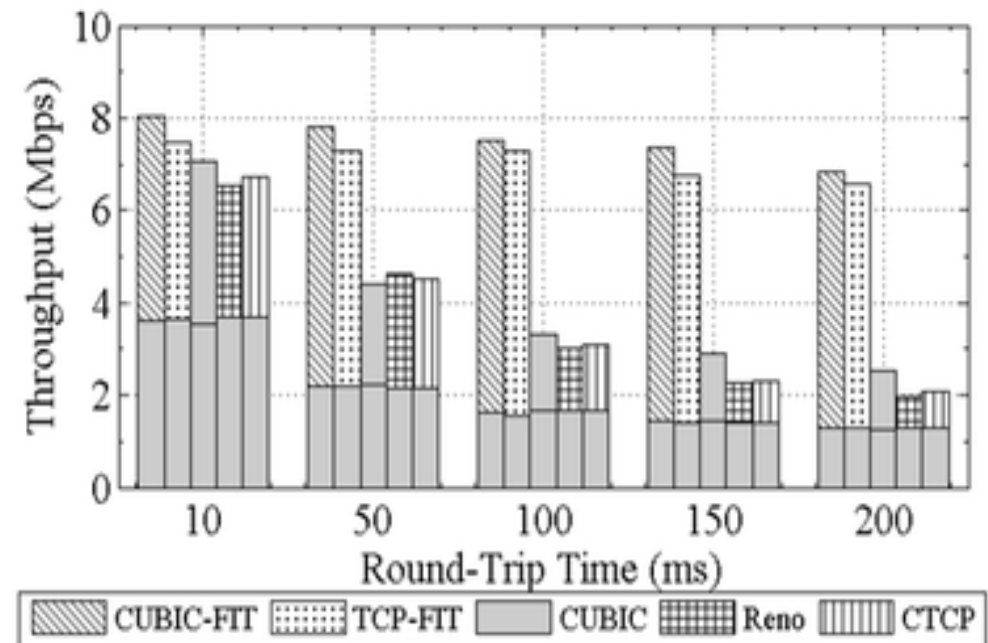
Throughput performance improvement over wireless networks more than plain CUBIC.



Performance over large range of network



Maintain graceful friendliness with widely deployed plain CUBIC servers.





Thank You!